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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|------------------------|---------------------|------------------|
| 09/944,569 | 08/31/2001 | Gustavo D. Leizerovich | CM03387J | 2495 |

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| | |
|-------------|--------------|
| EXAMINER | |
| WIN, AUNG T | |
| ART UNIT | PAPER NUMBER |

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/944,569 | LEIZEROVICH ET AL. | |
| | Examiner | Art Unit | |
| | Aung T Win | 2645 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 16, 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16, 17 and 18 recite the limitation "the comparing" in Claims 16, 17 and 18. There is insufficient antecedent basis for this limitation in the claims 16, 17 and 18.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 5, 7, 8, 10, 11,13, 14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Su.

Regarding Claim 7, Su discloses a transmitter [Figure 3] for optimizing a supply modulation comprising: a radio frequency power amplifier (Output Stage 43) [Column 4, Line 53] for amplifying a low level RF signal and providing an amplified RF signal; a power supply (Class D Amplifier 37) for providing power to the radio frequency power

amplifier [Column 3, Line 25-28] in correspondence with a modulation signal (output modulated digital signal from the Quantizer 36 which receives the output signal of the difference detector 35) [Column 6, Line 1-11] supplied to the power supply; a means (Quantizer 36) for generating an envelope of a signal (RF output signal) to be transmitted and providing the modulation signal to the power supply [Figure 3], the modulation signal corresponding to the envelope of the signal to be transmitted; and a means (the difference detector 35) [Column 5, Line 27-30] for comparing an actual signal (output of envelope detector 34) to be transmitted with an expected signal (output of envelope detector 33) at some point in the transmitter; wherein the modulation signal is adjusted in response to detecting a deviation of the actual signal to be transmitted from the expected signal (the digital modulation signal is generated in response to the output difference detector 35 and threshold level) [Column 6, Line 23-29].

Claim 1 which is the method claim corresponding to Claim 1 is rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 7.

Regarding Claim 8, Su further discloses means for linearizing the signal to be transmitted (Feedback loop 32) [Column 5, Line 35-54].

Claim 2 which is the method claim corresponding to Claims 8 is rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 8.

Regarding Claim 10, Su discloses that means for comparing compares reference baseband signals (output of envelope detector 33) with summed baseband signals (output of envelope detector 34) in the transmitter [Column 5, Line 27-30] [Figure1].

Claim 4 which is the method claim corresponding to Claim 10 is rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 10.

Regarding Claim 11, Su discloses that the means for comparing compares a low level RF signal (output of envelope detector 33) with an amplified RF signal (output of envelope detector 34) at the input and output, respectively, of the RFPA [Column 5, Line 27-30] [Figure1].

Claim 5 which is the method claim corresponding to Claim 11 is rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 11.

Regarding Claim 13, Su discloses a method of modulating a supply voltage supplied to a radio frequency power amplifier (method for providing an efficient highly linear RF power amplifier implementing with Class D Amplifier 37 for providing power to the Output Stage 43) [Column 3, Line 25-28] [Column 4, Line 53] [Figure 3] in a transmitter, comprising: providing a signal to be transmitted (RF output signal), the signal having an envelope; providing a modulation signal (output voltage signal from the Quantizer 36) [Column 6, Line 1-11] to a power regulator (Class D Amplifier 37) for providing the supply voltage, the modulation signal corresponding to the envelope of the signal to be transmitted [See Figure 3]; and adjusting the modulation signal to avoid excess gain compression at a gain stage of the transmitter (adjusting the modulation signal in response to whether the output of the envelope detector 34 is greater than or less than that of the envelope detector 33 [Column 6, Line 23-29] to generate linearly-amplified [Column 3, Line 65-67], the amount of current demanded by the phase output stage 43 [Column 5, Line 15-16]).

Regarding Claim 14, Su further discloses a method for linearizing the signal to be transmitted (Feedback loop 32) [Column 5, Line 35-54].

Regarding Claim 16, Su discloses a method of comparing which comprises comparing reference baseband signals (output of envelope detector 33) with summed baseband signals (output of envelope detector 34) in the transmitter [Column 5, Line 27-30] [Figure1].

Regarding Claim 17, Su discloses a method of comparing which comprises comparing a low level RF signal (output of envelope detector 33) with an amplified RF signal (output of envelope detector 34) at the input and output, respectively, of the RFPA [Column 5, Line 27-30] [Figure1].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3, 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su in view of Gailus as disclosed by the applicant.

Regarding Claim 9, Su discloses all the limitations in Claim 8 except for the teaching that means for linearizing comprises Cartesian feedback.

Gailus discloses the Cartesian feedback transmitter [Figure 1] implemented with first and second feedback paths 14 and 15 for the transmitter to operate in a satisfactory linear mode [Column 1, Line 10-15]. Also, Gailus further teaches that using the Cartesian feedback transmitter will optimize the baseband signal levels for linear transmitter.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Su's feedback loop 32 with the Cartesian feedback as taught by Gailus for achieving proper loop phase adjustment and optimized baseband signal levels [Column 1, Line 36-40].

Claim 3 which is the method claim corresponding to Claim 9 is rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 9.

Regarding Claim 15, Su discloses all the limitations in Claim 14 except for the teaching that the method for linearizing comprises Cartesian feedback.

Gailus discloses the method of maintaining linear operation of Cartesian feedback transmitter [Figure 1] implemented with first and second feedback paths 14 and 15 for the transmitter to operate in a satisfactory linear mode [Column 1, Line 10-15]

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the feedback loop 32 as taught by Su with the Cartesian feedback as taught by Gailus for linearizing the signal to be transmitted. One of the ordinary skilled in the art would have been motivated to do this to assure proper loop phase adjustment and optimized baseband signal levels [Column 1, Line 36-40].

4. Claims 6, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su in view of Williams.

Regarding Claim 12, Su discloses all the limitations in Claim 7 except for the teaching that comparing means comprises digital signal processor.

Williams discloses the apparatus and method for efficiently implementing a satellite transceiver system comprises digital signal processor 438 for comparing the input signals and the result signals to generate correction signals [Column 7, Line 50-52]. Moreover, one of the ordinary skilled in the art realizes that digital signal processors are designed and widely utilized specifically for the types of operations required in digital signal processing.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the comparing means disclosed by Su with the digital signal processor as taught by Williams for comparing an actual signal to be transmitted with an expected signal. One of the ordinary skilled in the art would have been motivated to do this to carry out such processing faster.

Claims 6 and 18 are the method claims corresponding to Claim 12 are rejected for the same reasons as stated above because the claimed steps read on the corresponding means on Claim 12.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

| | | |
|-------------------|-------------|--------------|
| Khan et al | Patent No.: | 6,445,249 B1 |
| Leizerovich | Patent No.: | 6,353,359 B1 |
| Huang et al. | Patent No.: | 5,574,994 |
| Makikallio et al. | Patent No.: | 5,697,074 |
| Midya et al. | Patent No.: | 6,141,541 |


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aung T Win whose telephone number is (703) 605-4306. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (703) 305-4895. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2645

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Aung T. Win
Group Art Unit 2645
February 18, 2005



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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600